

University of Wollongong

Research Online

Faculty of Health and Behavioural Sciences -
Papers (Archive)

Faculty of Science, Medicine and Health

1-1-2008

Trends in improved security measures - reducing armed robberies in pharmacies

Fiona M. Weigall
University of Wollongong

Alison F. Bell
University of Wollongong, abell@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/hbspapers>



Part of the [Arts and Humanities Commons](#), [Life Sciences Commons](#), [Medicine and Health Sciences Commons](#), and the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Weigall, Fiona M. and Bell, Alison F.: Trends in improved security measures - reducing armed robberies in pharmacies 2008.
<https://ro.uow.edu.au/hbspapers/695>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

Trends in improved security measures - reducing armed robberies in pharmacies

Abstract

The overall aim of this study was to examine factors that have contributed to a decrease in hold-ups with particular reference primarily to pharmacies and secondly to other target groups such as convenience stores and bottle shops. The study identified a number of differences between the characteristics of pharmacies that were robbed and those not robbed including: location, staff working alone, visibility into the store and longer trading hours. The Pharmacy Guild will use the findings to assist their members to develop effective risk mitigation strategies.

Keywords

pharmacies, security, improved, measures, reducing, trends, armed, robberies

Disciplines

Arts and Humanities | Life Sciences | Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details

F. M. Weigall & A. F. Bell 2008, Trends in improved security measures - reducing armed robberies in pharmacies, WorkCover NSW, Gosford NSW.

TRENDS

IN IMPROVED SECURITY MEASURES

REDUCING ARMED ROBBERIES IN PHARMACIES



FINAL REPORT

SEPTEMBER 2008

making a difference

FOREWORD

WorkCover Assist Applied Research Project Final Report - 'Trends in improved security measures – reducing armed robberies in pharmacies'.

This research was funded under the WorkCover Assist Applied Research Program. The grantee, the Pharmacy Guild of Australia, NSW Branch undertook the research in partnership with Health & Safety Matters Pty Ltd and the University of Wollongong.

The overall aim of this study was to examine factors that have contributed to a decrease in hold-ups with particular reference primarily to pharmacies and secondly to other target groups such as convenience stores and bottle shops.

The study identified a number of differences between the characteristics of pharmacies that were robbed and those not robbed including: location, staff working alone, visibility into the store and longer trading hours. The Pharmacy Guild will use the findings to assist their members to develop effective risk mitigation strategies.

FINAL REPORT - REVISED

Trends in Improved Security Measures – Reducing Armed Robberies in Pharmacies

WorkCover NSW Project No. 2006/020202



Principal investigators:

Fiona Weigall

Certified Professional Ergonomist

Master of Public Health

BAppSc(OT), GradCAppErg, GradCAduItEd

& Alison Bell

Certified Professional Ergonomist

Master of Science (Research) Candidate

BAppSc(OT), GradDip(SafeSc), GradCHlthSc(Ed)

Health & Safety Matters Pty Ltd

PO Box 707, Gympie, NSW 2227

Ph: +61 2 9501 1650

September 2008

Acknowledgements

The report authors wish to acknowledge the invaluable assistance from:

- Dr Lynn Kemp, Research Advisor
- Ms Kate Tribe & her team at Tribe Research
- Ms Ngaire Pettit-Young, at Information First
- Dr Maurice Oxenburgh & Ms Pepe Marlow
- Pharmacists participating in the online surveys
- Pharmacists participating in the interviews
- Project Officers at the NSW Bureau of Crime Statistics and Research (BOCSAR)
- Various personnel and Crime Prevention Officers at the NSW Police Service
- Dr Claire Mayhew, Researcher, formerly with the Australian Institute of Criminology
- Ms Nora Fenton, Pharmacy Guild NSW
- Mr Michael Woger, Guild Insurance
- Dr Lynn Guy, WorkCover NSW Research Centre of Excellence
- WorkCover officers, including Ms Deidre Rodwell and Ms Pam Estreich

Disclaimer

This research was funded under the WorkCover NSW WorkCover Assist Program. The research conclusions are those of the authors and any views expressed are not necessarily those of WorkCover NSW.

Contents

Executive Summary	4
1. INTRODUCTION	6
1.1 Armed robbery and occupational health	6
1.2 Armed robbery in pharmacies & other businesses	6
1.2.1 Description of the robberies	6
1.2.2 Offenders and their weapons	8
1.2.3 Victims of robberies	9
1.3 Key risk factors for armed robberies – summary of the literature	9
2. PROJECT DESCRIPTION	14
2.1 Goals & objectives	14
2.2 Project limitations	14
3. METHODOLOGY	16
3.1 Survey to pharmacists	16
3.1.1 Survey aim, questions & distribution	16
3.1.2 Ethical behaviour and conduct of research	16
3.1.3 Pilot study	17
3.1.4 Final survey	17
3.1.5 Data analysis	18
3.2 Interviews with pharmacists	18
3.3 Cost-benefit analysis	19
4. RESULTS	20
4.1 Survey respondents	20
4.2 Summary of key findings from survey & interviews	20
4.2.1 Socioeconomic area and crime rates	21
4.2.2 Pharmacy location & surroundings	22
4.2.3 Pharmacy design	24
4.2.4 Risk mitigation strategies	25
4.2.5 Cash control procedures and banking procedures	26
4.2.6 Opening hours & procedures	28
4.2.7 Staffing	30
4.2.8 Working alone policy	32
4.2.9 Training in armed hold-ups or related	32
4.2.10 Offenders, weapons and behaviour	33
4.2.11 Summary of significant differences	33
4.3 Cost benefit analysis results	34
5. DISCUSSION & CONCLUSION	36
6. RECOMMENDATIONS	38
7. REFERENCES	40

Executive Summary

This research was undertaken to assist members of the Pharmacy Guild of Australia (NSW Branch) to reduce their risk of being a victim of an armed robbery. Despite the gradual reduction in pharmacy robberies over the past 10-15 years, the past 2 years has seen a relatively stable rate of robberies.

The focus of the research was to compare characteristics of pharmacies that had been robbed in the 2 years prior to the survey with pharmacies that had not been robbed. Methods used to gather this data included: reviewing police data; conducting an electronic survey to pharmacists; and conducting interviews with pharmacists at selected pharmacies.

Response rate to the electronic survey was 20.5%, with 266 respondents. Of these, ten pharmacists reported that the pharmacy had been robbed. These robbed pharmacies (the 'cases') were then matched with non-robbed pharmacies ('controls'), and differences between these two groups were investigated further by interview.

Findings from the research revealed that most pharmacies already use a range of risk mitigation strategies, such as having good lighting, cash control procedures, use of opening and closing procedures, and staff training in what to do in the event of an armed robbery.

The comparisons between the robbed and not robbed pharmacies suggest that to reduce the risk of offenders targeting and entering the pharmacy, pharmacists should consider:

- avoiding being located within a medical centre (although the reasons behind this difference are not known and require further investigation)
- avoiding being located in an isolated area, where there is limited pedestrian traffic or businesses open at different times or for shorter periods
- being aware of having easy access for quick getaways
- improving visibility into the premises
- reviewing opening hours, and avoiding long hours unless other measures are in place (eg locked doors with buzzers/intercoms)
- having a 'no working alone' policy

Other measures such as time delay safes also appear to assist as a deterrent.

The evidence for factors that are associated with robbed or not robbed pharmacies is not always consistent however, as despite some trends (as identified in this study and in past research), there are also robberies in pharmacies located in seemingly low risk sites and in those already employing a wide range of risk mitigation strategies. The explanation for this is that many robberies against pharmacies are 'opportunistic', being unplanned and often low yield, as opposed to the 'planned' robberies that use harder to obtain weapons (eg firearms) and achieve a higher yield.

Should an offender enter the pharmacy, the aim must be harm minimisation. The pharmacist and their staff need to reduce their risk of being assaulted and follow the guidelines as provided by the police or as developed by the Pharmacy Guild of Australia. As robbery is an infrequent and unpredictable event, currency of training is important to remind all staff of the recommended steps to take in the event of a robbery.

The most cost effective method for implementing solutions within the pharmacy industry would be for industry-wide information to be developed and distributed to individual pharmacies. This would include help with choosing a location for a pharmacy and advice on the design of new or refurbished pharmacies along with any additional training material for employees, including guidance on managing individual reactions to armed robbery events.

This guidance material could assist pharmacists to assess their exposure to armed robbery risk and identify their current risk level, and could guide them to take the appropriate preventative measures, particularly where they are thought to be cost effective. As the results of this project show, there are also risk mitigation initiatives that require little or no additional cost to the individual pharmacy. One existing but as yet unpublished guide for the pharmacy industry on 'how to reduce armed hold ups' was located, and the advice in this document is consistent with the findings in this report and it is recommended that this guide is provided to pharmacies throughout NSW

The characteristics of the pharmacies appear to have many similarities with other 'soft' targets, such as small retail businesses that are also often open for relatively long hours. It is believed that this guidance material would have relevance to other businesses with similar characteristics to pharmacies, and assist them to also reduce their risk of armed robberies and the resultant health and safety problems experienced by pharmacy staff and other victims of crime.

1. INTRODUCTION

1.1 Armed robbery and occupational health

Robbery is the unlawful taking of property, without consent, accompanied by force or threat of force. Robbery victims can be persons or organisations, and the robbery may be conducted with a weapon (armed) or without a weapon (unarmed). While robberies have financial and economic implications for the business, the people working in the business and confronted by the offender may also be affected. Armed hold ups in particular can result in employees and others at the premises being seriously or fatally injured or suffering from post-traumatic stress.

Police have a key role in the prevention of crime and the apprehension of offenders under various criminal laws, and employers and business owners also have a role to play. In Australia each state and territory's occupational health and safety laws impose a 'duty of care' on employers to ensure as far as practicable the health, safety and welfare of their employees and of others in their workplace, including in the event of an armed robbery.

1.2 Armed robbery in pharmacies & other businesses

1.2.1 Description of the robberies

Businesses most at risk of armed robberies in Australia are in the retail sector, and in 2005 just under half of all victims of armed robbery were robbed in a retail premises (45%), followed by victims in open public settings (43%) (Borzycki 2008).

Of the businesses targeted for robberies, pharmacies have special appeal for many offenders, as described below.

".... Chemist shops and drug dealers represent the ultimate desperate robbery, for the ultimate object of crime (drugs) can be taken directly..." (Indermaur 1995, in Mayhew 2000)

Robberies in the business/commercial sector have declined over the past 10 years in NSW, from a peak of 3852 robberies in 1998, to 1409 in 2007. Within this group, NSW pharmacies also experienced a peak of robberies in 1998 with 261 reported to police, and these gradually declined to approximately 50 robberies per annum over the past 2 years. Robberies of service stations, bottle shops and general stores/convenience stores have also declined over this time, though the decline is less marked (BOCSAR 2008a). However over the past 2 years of data (2006 & 2007) armed robberies for service stations and bottle shops in NSW have continued to decline (22% decline for service stations and 47% decline for bottle shops) while the armed robbery number in chemists has remained stable (BOCSAR 2008b).

The risk of bank robbery has been declining from approximately 91 bank robberies per 1,000 branches in the 1980s to 26 robberies per 1,000 branches in the year 2000 (Borzycki 2003). Since 2000 the number of robberies at financial institutions has continued to decline (BOCSAR 2008b). A review of the data suggests that risk mitigation strategies adopted by banks and financial institutions has made these targets 'hard' and has resulted in offenders turning to targets perceived as 'softer' such as service stations and pharmacies (eg Weir 1999). Pharmacies are also popular targets for offenders due to the availability of money and drugs.

The most recent data available (BOCSAR 2008a) shows that the highest number of all robberies in NSW (armed and robbery without a weapon) is currently in service stations with 306 robberies in 2007, as compared to 53 in pharmacies. No incident rates are available from BOCSAR, but when compared with numbers of service stations (1,950 service stations: Knight Frank Research 2008) and pharmacies in NSW (1,767 pharmacies: Pharmacies Board 2008), this equates to rates of 1 robbery per 6 service stations and 1 robbery per 33 pharmacies.

In a comparison of businesses who have had armed robberies, data shows that while the 24 month trend for service stations and supermarket bottle shops is down, the same is not evident for chemists (BOCSAR 2008b), with the past 2 years having 40 then 47 armed robberies recorded, as illustrated in Table 1.

Table 1. Selected businesses and number of armed robberies as recorded by NSW Police (BOCSAR 2008b)

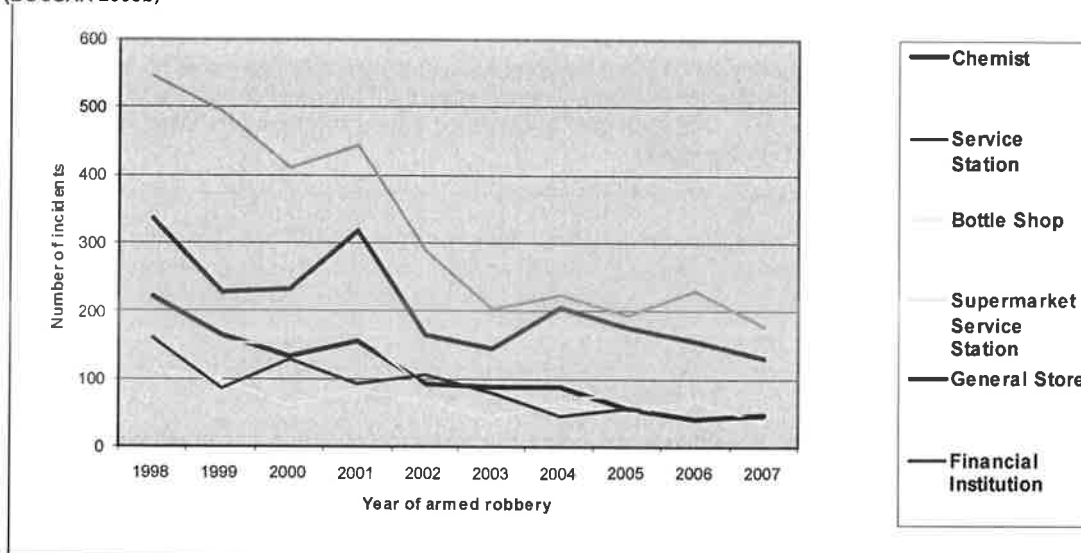
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	24-month trend**	% change over 24 months**
Chemist	220	165	134	156	92	88	87	57	40	47	stable	***
Service Station	545	495	411	444	289	204	224	194	230	179	down	22.2
Bottle Shop	112	97	60	83	65	43	65	49	68	36	down	47.1
Supermarket	180	153	152	166	85	63	72	74	82	65	stable	***
Service Station	337	227	233	317	164	145	206	175	156	130	stable	***
General Store	160	86	129	93	107	78	45	57	41	46	stable	***
Financial Institution												

** This table shows the results of a statistical test for significant upward or downward trends in the number of incidents recorded over a two year period.

The trend test used is Kendall's rank-order correlation test. Where the trend is significant ($p < 0.05$), the percentage change between the last 12-month period and the preceding 12-month period is shown. A non-significant test result is denoted by 'stable'.

***No annual percentage change is given if the trend is 'stable'

Graph 1. Number of incidents of armed robbery recorded by NSW Police Force 1998 - 2007 for selected premises (BOCSAR 2008b)



There is some inconsistency between data sets, perhaps explained by different reporting systems and lack of reporting. Raw figures obtained from the key pharmacy insurer (Guild Insurance 2006) show that in the past 2 years there has been a reduction from 147 armed robberies across Australia for their pharmacy policy holders in 2003/04 to 114 in 2004/05, with approximately half of all claims from NSW policy holders. The data suggest that NSW pharmacy policy holders had 88 armed robberies in 2003/04, reducing to 67 in 2004/05.

Further investigation of the robberies provides information surrounding the events. Australian Institute of Criminology (AIC) data shows that pharmacy robberies in Australia have most typically occurred between 3pm – 5.59pm (30%) followed by 6pm – 8.59pm (23%) and noon – 2.59pm (20%), and this is likely to reflect the hours of opening (Borzycki 2008). In contrast, premises that are typically open extended hours such as service stations have the majority of robberies from midnight to 2.59am (27%) and in the evening hours of 9pm to 11.59pm (23%)(Borzycki 2008).

Property taken from pharmacies and chemists Australia wide is commonly 'cash' (59%) followed by the category 'alcohol and other drugs' (26%) and electrical equipment (such as mobile phones). In 2005 the average dollar value of the property stolen in pharmacies and chemists was \$699 (based on data from 39 robberies). However the range of values from all robberies was large and the median for all robberies (not just chemists) was \$200, with 23% of all robberies resulting in nil value (Borzycki 2008).

1.2.2 Offenders and their weapons

Figures for armed robberies consistently show offenders to be young males, and in 2005, 90% of offenders were male, and 95% were aged under 40 years. In pharmacy robberies specifically, the average age of offenders was 32 years (Borzycki 2008). Borzycki goes on to propose that offenders targeting pharmacies are often opportunistic and act alone or in pairs, and are prepared to accept smaller takings as compared to those who target banks that are more high risk and lucrative.

The typical weapon in pharmacies is a knife (64%), with firearms only accounting for 9% of all armed robberies. This relatively low percentage of firearm use as a weapon is in contrast to banks that have the highest rate at 44% of all weapons followed by licensed premises at 35%. For lone offenders, 83% used a knife (Borzycki 2008).

Interviews with convicted offenders for business robberies indicate that they have no empathy for employees and will not hesitate to use force where required. If they are carrying a weapon they are usually prepared to use it. For example, a convicted armed robber interviewed for the ABC television program 'Four Corners' said:

"Why would you care about the victim? You don't want to kill him, but if he mucks you around, well something's going to happen to him... you're not walking in there with it (the weapon) to show it around..... Someone tries to stop you, how foolish are they gonna be?" (ABC 2004.)

There is a growing body of evidence regarding the influence of drugs on armed robbery, and particularly a link between methylamphetamine use and violent crime. Mouzos et al (2007) report that within a sample of 71 violent and/or property offenders who admitted to being under the influence of methylamphetamine at the time of the robbery, 75% of the offenders described how the drug gave them more courage and more confidence to commit the crimes. An emergency

doctor at St Vincent's Hospital Sydney reported a 5 fold increase in patients admitted with methamphetamine or 'ice' psychosis from 2000 to early 2006, and he reported that it could take 6 staff members to restrain someone who was psychotic with 'ice' (Fulde, quoted in ABC 2006). Fulde added:

"These are the most violent human beings I've seen in my life, and I've been around a long time".

According to national crime data, as well as being male and young, armed robbers are often influenced by different drugs, with:

- 52% addicted to drugs or alcohol at the time of their arrest; and
- 62% under the influence of drugs or alcohol during violent crimes (AIC 2006a).

These figures appear consistent with findings from a study of bank robbers where the offenders' most common reason given for committing the robbery was to support a drug habit, and many reported having committed the robbery while under the influence of a drug (Nugent et al 1989).

1.2.3 Victims of robberies

While there are many reports outlining robberies, there is less information on the victims of the robberies. In Australia in 2003, 46% of the victims of armed robberies (4,106 cases) were in retail settings, with 9% in service stations (819 cases/victims), followed by 3% in pharmacies (277 cases), 3% in banks (223), and 1% in bottle shops/pubs (59 cases) (Borzycki, Sakurai & Mouzos 2004).

Of the armed robberies in pharmacies, the individual victims were typically males aged 60+ and females aged between 18 to 59 years (Borzycki 2008).

These individual victims of robberies display a range of responses, from those who are able to resume work immediately and suffer no apparent negative health effects, to those who are disabled by post-traumatic stress symptoms and cannot resume work either in the retail business or elsewhere. According to convicted robbers' reports, where victims do not do as they are told the most common response is to physically attack the victim, with some robberies resulting in death of the victim (Nugent et al 1989).

1.3 Key risk factors for armed robberies – summary of the literature

Past studies into retail crimes have identified a number of factors that are believed to impact on armed robbery risk. However while many strategies are recommended as being effective, few studies were located that provided evidence for the strategies. Many studies combined strategies rather than isolating strategies for comparison, while others failed to provide a 'control' yet claimed associations. There are also a very limited number of current studies that isolate different risk mitigation strategies for comparison.

Of those studies located that were better designed, the features of retail premises and pharmacies that most influenced risk of armed robbery were:

- workplace environment - including external landscaping, external lighting, vision into and around the store and surveillance measures (eg CCTV)
- cash handling methods

- recent experience of a burglary
- number of staff on duty

Each of these factors is summarised below.

Factors most affecting risk

Workplace environment

The overall workplace design is often reported to impact on crime rates, and the rationale for this is described in the crime literature as Crime Prevention Through Environmental Design (CPTED). These preventative designs involve the implementation of four key strategies: Territorial Reinforcement, Surveillance, Access control, and Space/Activity Management. While no studies have been located that evaluate the impact of each element of this approach, there is some evidence that the overall design and appearance of the premises does affect crime rates (Peek-Asa & Howard 1999; Mayhew & Chappell 2001).

External landscaping

Landscaping is one environmental design aspect that is supported as influencing crimes such as store robbery. The commonly reported problems with landscaping are: vegetation or structures that restrict visibility into and out of the premises and may be used to obscure an offender (Mayhew 2000; Wilkinson 2001); areas of landscaping or ground that show neglect and infrequent use (Mayhew 2000); and difficult pedestrian access (Bell 1991).

External lighting

Another aspect of the environment that affects robbery is lighting. There is good evidence that increased lighting in public areas reduces crime (Sherman et al 2002; Welsh & Farrington 2002a) and this is believed to result in increased public perception of safety; increased street usage (thus facilitating informal surveillance); and increased chance of identifying offenders (AIC 1995). While there is not specific evidence supporting use outside business premises, the above data suggests lighting is important.

Vision into the premises

The issue of lighting and visibility is also relevant within the premises, and there is good evidence that visibility within and into stores reduces robbery. Features of well-designed stores for vision, such as the '7-Eleven' convenience stores, share the following characteristics:

- clear line of site from cash register site to outside;
- not placing posters or shelving against windows, or placing these low or high to allow good site-lines;
- avoidance of high shelving in stores; and
- use of mirrors in hidden corners, and 2-way mirrors for surveillance.

(Lins & Erikson 1998; Canadian Centre for Occupational Health 2001; AIC 2004a; Mayhew 2000).

Interestingly, the visibility of the teller or cashier workstation has had two opposite effects on bank robbers, with reports that this had either encouraged or discouraged their offence (Nugent et al 1989).

Surveillance measures

As well as natural surveillance achieved by store layout and lighting, closed circuit televisions (CCTVs) provide another form of surveillance. Data from Australia suggests an 8% reduction in crime in areas with CCTVs as compared with a 9% increase in crime in 'control' areas (AIC February 2006), and other studies have also reported crime reduction (eg Sherman et al 2002). Unfortunately many studies compare crime rates once CCTV together with many other strategies have been implemented, so the contribution of just the CCTV cannot be determined.

The impact of CCTVs on robbery prevention is also not clear, and the only case-control study located on robbery at small businesses (a study of convenience stores) showed no significant differences between premises with or without CCTVs (Crowe & Erikson 1984, in Sherman et al 2002). There is also a potential risk with having a CCTV according to one group of researchers (Welsh & Farrington 2002b) whereby personnel may feel a false sense of security with CCTVs and so be less vigilant.

The Australian Institute of Criminology agrees that CCTV effectiveness if used in isolation is 'ambiguous' and they recommend that CCTV is most effective when linked with other strategies. They also warn that CCTV on its own has no effect on preventing violent crime (AIC 2006b). Bank robbers have claimed to be undeterred by seeing cameras and alarms, though this is influenced by their perceived risk of being photographed by the cameras or their ability to avoid them, and may also be influenced by how desperate they are (Nugent et al 1989).

Cash handling

Reducing the rewards of robbery through careful cash handling strategies is another method recommended to reduce robbery risk. Studies have found that good cash handling strategies include: timed-release safes; drop boxes with chutes for storing cash; keeping limited cash onsite and/or in the till; having cash limits on withdrawals; and advising via signage that limited cash is available and that time delay locks are used (Clarke & McGrath 1990; AIC 1995; Lins & Erikson 1998). These findings regarding time delay safes have been confirmed by bank robbers, with 80% of a sample of 110 convicted armed robbers stating that the use of time delay locks on safes would make them less likely to rob the premises (Nugent et al 1989).

Strategies regarding banking are also recommended (eg frequent bank deposits, at irregular times and via a number of routes) however the relative effectiveness of these strategies has not been reported.

Past burglary

Another factor impacting on robbery risk is the experience of a past burglary. An Australian study found that robbery rates in pharmacies that had been burgled in the previous year were significantly higher than in pharmacies that had not been burgled (Taylor 2002a). This 'repeat victimisation' occurs with both burglaries and robberies, and repeat offences tend to happen quickly, before prevention measures have been implemented (AIC 2003b).

Number of staff on duty

The final factor that was shown to affect robbery risk was staffing numbers, and an increase from one staff member to two reduced robbery risk in a USA study into convenience stores (National Association of Convenience Stores 1991.) This factor is supported by a study of offenders, where convicted robbers reported being attracted to premises with a small number of staff on duty (with 65% claiming they would be more likely to rob a place with one staff member on duty), and also being more attracted to premises with female staff (Nugent et al 1989).

Other factors affecting risk

While other factors were reported as influencing armed robbery risk, there was a lack of data to prove or support their effect. This lack of evidence does not mean that the factors are not

relevant to affecting crime rates - and they may prove to be more important than other factors – but there is inconclusive or limited data supporting their role. These factors are:

- workplace location
- access and egress to the store
- counter design
- security screens
- duress alarms
- opening hours
- shop turnover
- staff training

Workplace location

A study of more than 700 pharmacies found no significant difference in armed robbery rates for those located in shopping strips as compared with those in shopping malls or other shopping centres (Taylor, April 2002). In interviews with a small sample of offenders (n=34), only 30% reported that they would be less likely to rob a premises if it was located in the middle of a shopping centre, with 70% claiming it would make no difference in their decision. The issue of passing pedestrian traffic had similar responses (Nugent et al 1989). In the same study the most frequent reason reported for targeting business for robberies was "ease of getting away" suggesting that there are a number of features of the location that influence the offender. Interestingly some offenders reported that despite higher risks of apprehension they may still rob the premises if they were desperate for drugs.

Access and egress

The value of controlling and/or monitoring peoples' movements in and out of stores through initiatives such as movement sensors, door alarms, and restricted access times has not been reported, though this is recommended to reduce robbery (Mayhew 2000; Canadian Centre for Occupational Health 2001).

Counter design

The impact of counter design on armed robberies is also not clear, though there is some evidence, and logic would suggest, that high and deep counters may reduce the risk of physical violence from an offender (Mayhew & Chappell 2001; Swanton & Webber 1990; Mayhew 2000a). A counter with a raised flooring for staff to stand on, such as a dispensing counter, is also reported to reduce the risk of occupational violence as it increases the distance between the customers and staff member and also improves the staff's surveillance of the area and their identification of potential offenders (Chappell & Di Martino 2000; Mayhew 2000)

Security screens, duress alarms etc

Other security measures such as security guards, security screens and duress alarms are not well researched. The value of security guards is not yet proven in affecting armed robbery rates (eg Sherman et al 2002). The evidence regarding the value of bullet proof security screens in business premises is inconclusive, with a USA study showing no reduction in robbery rates (Hannan 1982) but with two other studies showing a reduction (Grandjean 1990; & Ekblom 1998 in Sherman et al 2002). The impact of screens on staff health and safety was not noted in these studies. Studies into the impact of duress alarms on armed robbery rates and the impact of armed robbery were not located, though these alarms are recommended where personnel feel at

risk of harm (Mayhew & Chappell 2001) and signage advertising duress alarms are also believed to deter some potential offenders (The Canadian Centre for Occupational Health 2001) as well as increasing the likelihood of their arrest.

Opening hours

The influence of store opening hours on armed robbery is also unclear, though some researchers hypothesise that victimisation of pharmacies has been greater in the afternoon and evening as offenders anticipate a greater amount of cash than earlier in the day (Borzycki et al 2004). Premises with long opening hours, such as service stations, have been found to be more at risk of robberies than those open shorter hours (Taylor 2002).

Shop turnover

Having a high annual turnover has been suggested as increasing armed robbery risk, and this was found to be the case in service station robberies, however pharmacy robberies showed no significant difference in turnovers between robbed and not-robbed (Taylor, April 2002).

Staff training

While staff training in managing an armed robbery is not a prevention technique, it is believed to assist staff in responding to the offender appropriately and not increasing their risk of being physically harmed as can happen when victims threaten or try to fight the offender (Lins & Erikson 1998; Mayhew and Chappell 2001; Gibson 2006).

These past studies provide good background advice on some strategies that have been found to reduce robbery risk in pharmacies, the retail sector and other business settings. This project aims to build on this existing work and to consider its relevance and application to reducing the risk of armed robbery in pharmacies in NSW.

2. PROJECT DESCRIPTION

2.1 Goals & objectives

The Pharmacy Guild NSW identified that their members – most pharmacists in NSW - were at risk of having armed robberies in their businesses. The Pharmacy Guild's goal was to assist their members to develop effective risk mitigation strategies through a grant from WorkCover NSW Assist.

While the literature provides some advice on reducing armed robbery risk, many strategies remain untested – for pharmacies and for retailers. It is also not known how well equipped pharmacies in NSW are for preventing armed robberies, and of specific steps that they could take to improve the safety and welfare of their staff and customers.

The specific areas of concern and interest to assist pharmacies are:

- What risk mitigation strategies are currently in use in pharmacies in NSW?
- Which risk mitigation strategies might assist pharmacies to reduce their risk?
- Is there evidence that proves the value of any of these strategies for pharmacies?
- Is there a 'cost benefit' for implementing the strategies within pharmacies?
- Are any of these strategies also relevant to other 'high risk' businesses in NSW, such as bottle shops, service stations and convenience stores?

To address the above concerns, the Pharmacy Guild together with Health & Safety Matters Pty Ltd developed this project with the following aims:

- To analyse current incidence rates of armed robbery in pharmacies
- To identify the current risk mitigation practices used by pharmacists in NSW
- To determine the effectiveness of the different strategies
- To compare the cost-benefits of the strategies
- To identify measures that could be extrapolated to similar business premises

These tasks were contracted to Health & Safety Matters Pty Ltd who worked with the Guild NSW, pharmacists, and a research team to conduct a research-based enquiry to gather the answers.

2.2 Project limitations

The main limitation with this project was the lack of access to existing industry data. In the early stage of the project it was identified that Guild Insurance routinely collected data regarding their clients who held business insurance policies with them. This data included a description of the risk mitigation strategies used by the pharmacies and observed by the insurance agents, and the data was updated almost annually or when there were changes to the policy, such as following a robbery. Guild Insurance originally offered to provide this data for research purposes, however after almost 6 months of negotiations and discussions and waiting for the data this decision was overturned following reported legal advice to Guild Insurance. This decision was a major setback for the project. The use of this data would have allowed for a longitudinal study assessing and comparing the different characteristics of pharmacies both before and after robberies.

As this data was not available, a snapshot of the current situation in pharmacies was undertaken, using an online survey as the main tool. The reliance on an online survey is not an ideal method to gather data as:

- surveys do not tend to have a high return rate, particularly surveys of small businesses
- this survey relied on subjective opinions

- the survey also required the pharmacists' time and interest to complete it

A further and unexpected limitation with this survey was a misunderstanding of the question regarding 'robbery' and the confusion with 'burglary'.

The follow up phone interviews regarding their robberies also had limitations as:

- they relied on peoples' memories and recall of robberies and of the timing of when different strategies were implemented
- pharmacists reported they had very limited time for the interview, resulting in the interviews being restricted to a minimal number of questions and limited discussion

This project was targeted to pharmacies who were members of the Pharmacy Guild NSW, which represents approximately 90% of pharmacies in NSW, so data regarding other pharmacies was not collected in the surveys.

3. METHODOLOGY

3.1 Survey to pharmacists

3.1.1 Survey aim, questions & distribution

A survey was developed which asked pharmacists to provide details regarding their premises and their current risk mitigation strategies. The survey aimed to provide a snapshot of the current strategies in use and the characteristics of pharmacies in NSW, and to compare the robbed and not-robbed pharmacies to identify any differences.

The questions developed for the online survey were informed and developed directly from the factors identified in the literature review. In addition to these issues, other 'business risk surveys' such as those developed by Mayhew (Mayhew 2000) and the AIC (2007) were reviewed.

The survey was developed in an electronic format as the Pharmacy Guild reported having used online surveys previously and recommended this method over postal or other methods. The anticipated advantages of this method were less time and less intrusion for the pharmacist to complete the survey and a higher response rate, and less time spent in data entry for the researchers. The survey was developed in consultation with Tribe Research, a company that specialises in online survey development, and they used their own software (Tribal Tool-Kit) to format and structure the survey.

Pharmacy Guild members were all invited to participate in the survey via faxes to each member pharmacy, sent by the Industrial Officer at the Pharmacy Guild – a known and respected person within the industry. A paper-based version of the survey was also developed and faxed or emailed to pharmacists requesting the survey in this form.

The total number of subjects targeted by the survey was approximately 1300, representing the total number of pharmacies in NSW that were run by pharmacists who were financial members of The Guild NSW Branch.

3.1.2 Ethical behaviour and conduct of research

The survey was designed to address the research considerations as outlined in the Joint National Health and Medical Research Council/Australian Vice Chancellors' Committee Statement and Guidelines on Research Practice (1997), and the WorkCover NSW Grants Scheme Principles.

The original survey was also provided to the University of Wollongong/Illawarra Area Health Service Human Research Ethics Committee prior to distribution. Detailed advice was provided to the Committee regarding the:

- aims of the research
- expectations of participants
- ethical considerations
- rationale for participant selection
- recruitment methods
- information provided to participants
- consent issues
- confidentiality issues
- benefits or incentives offered; and
- proposed statistical methods to be used in the analyses.

After seeking the Committee's advice, the survey information was amended to include information regarding 'harm minimisation' in the form of counselling services should the person completing the survey become upset as a result of recalling a distressing situation (such as a robbery or assault) through completing the survey. Guild Insurance reportedly offers such a service to pharmacists and their staff who have been a victim of robbery or assault.

3.1.3 Pilot study

The survey was placed 'online' and was piloted with 12 pharmacists by using an electronic link to the survey page. Each member of the pilot group were selected and recommended by the Pharmacy Guild of NSW as each member was personally known by the Guild representative and reported as being a helpful and constructive person who would take the time to complete the survey and would also give honest feedback.

The aim of the pilot survey was to assess if:

- the pharmacist felt encouraged to participate in the study
- the wording and terminology were understood
- the survey was easy to follow
- the order of the questions was logical
- important questions were not left out
- the aim of the study was understood

After completing the pilot survey online the pharmacists were interviewed via telephone. Based on the feedback some questions were slightly re-worded to aid comprehension. No other changes were made.

3.1.4 Final survey

The final survey was developed in consultation with Tribe Research and linked to the Guild NSW website. The survey went live 'online' in mid December 2007, and pharmacists were invited to participate in this study by Nora Fenton, Guild Industrial Officer. The survey was kept open until mid January 2008 to capture a maximum number of respondents. After an initial poor response rate several reminders were issued by the Guild, and participants were further encouraged by being offered the incentive of 5 prizes (vouchers to the value of \$100) to be awarded for their completed survey.

The questions in the survey were based on the findings in the literature review, with the aim of covering all of the factors believed to influence risk. The survey asked pharmacists for their experiences and advice on the following topics regarding their pharmacy:

- location – postcode and physical situation
- surrounding environment
- internal design
- policies and procedures relating to cash handling
- security measures
- surveillance systems
- store hours
- staffing
- recent experience with armed robbery

The survey mainly consisted of tick boxes to indicate a strategy either was or was not in place, writing numbers to indicate hours and staffing, plus a limited number of short answers for elaboration on any strategies or if their approaches were different to those listed.

The survey was promoted as being confidential, with results only being seen by the researchers, and with results from the survey being de-identified, coded and summarised to allow for the necessary statistical comparisons.

3.1.5 Data analysis

Statistics experts from Tribe Research Pty Ltd conducted the statistical tests on behalf of Health & Safety Matters. The data for all robbed and non-robbed pharmacies were compared by the statisticians using group analysis methods. As the sample of robbed pharmacies was small, Tribe Research recommended and used the Fisher's Exact Test for all 2x2 comparisons, explaining that this is more conservative than the more commonly used Chi Square and other tests. To allow the use of statistical testing the statisticians recoded some questions with multiple categories into 2 categories.

The survey aimed to identify and compare differences between the robbed and non-robbed pharmacies, looking for statistically significant differences between the two groups. In the analysis the Tribe Research statisticians considered and reported on 3 levels of significance:

- differences approaching significance ($p < 0.10$)
- statistically significant differences ($p < 0.05$)
- highly statistically significant differences ($p < 0.01$)

3.2 Interviews with pharmacists

After analysing the data from the online survey, follow-up telephone interviews were conducted with those pharmacists indicating they had experienced an armed robbery in the 2 years preceding the online survey. These interviews with the 'robbed' pharmacies were conducted in March and April 2008.

The robbed pharmacies were then 'matched' with a sample of non-robbed pharmacies with the aim of providing a case-control model for analysis. The criteria used for the selection of matched pharmacies were:

- socioeconomic quartile
- remoteness area
- as many 'surrounding' features that are the same (especially if a medical centre, isolated, getaway access etc)
- the closest location geographically if there are multiple 'matches' and
- the closest socioeconomic area if there are still multiple 'matches'.

The aim of the interviews included:

- to gather details regarding the robbery/ies (day, time, staffing etc)
- to establish which risk mitigation strategies had been in place at the time of the robbery
- to determine if additional strategies were implemented following the robbery/ies and
- to seek further advice or tips of how risk could be further reduced for pharmacists and their staff.

An interview prompt form was developed to guide the interviews, however the emphasis was on encouraging the pharmacists to describe their experience and comment on the strategies they had in place, and other factors they believed influenced robbery risk.

The data from these follow-up interviews were aimed to supplement the data gathered in the online survey and to establish the order of events regarding robberies and risk mitigation

strategies that were reported in the online surveys. It was hoped that with this additional data it might be possible to determine the effectiveness of the different strategies, and provide advice about strategies to reduce the risk of being robbed in a pharmacy.

3.3 Cost-benefit analysis

A cost benefit analysis was undertaken using the Productivity Assessment Tool as developed by Oxenburgh et al (2004). This model is designed specifically for workplace interventions and takes data concerning employees including working time, supervisory costs, productivity etc, and data concerning the workplace such as overheads and insurances, and the cost or estimated cost of the proposed or actual intervention.

The analyses for this project were based on data provided by the Pharmacy Guild of Australia (NSW Branch) and the Guild Group and also on a series of assumptions based on the available data:

- 1300 pharmacies employing an average of 3.7 full-time employees of which it is assumed that one is a pharmacist and the balance are assistants.
- Wage costs are calculated on the basis of \$40 per hour for pharmacists and \$20 per hour for pharmacy assistants. Wage on-costs are calculated at the rate of 25%.
- The average pharmacy is open for business for 60 hours per week.
- The basic costs before and after a crime (rent, electricity, stock costs, workers compensation premium, etc.) are not changed and, in the 'Difference model' of cost benefit analysis these costs are not included as they cancel each other out.
- Under the pharmacy industry Workers Compensation scheme there is no claims experience component so the only relevant costs are to do with additional staffing during return-to-work. This is assumed to be equal to the workers compensation claim costs.

4. RESULTS

4.1 Survey respondents

The response rate to the online survey was 20.5%, with 266 of the 1300 pharmacies who were members of the Pharmacy Guild NSW Branch, responding. This response rate is considered an excellent response for small businesses.

Of the respondents, 6.4% (17) reported having been robbed since January 2006. However when the 17 pharmacists were interviewed by phone following the survey, 7 of this group described burglaries and break-ins, and had mistakenly identified these events as being the same as 'robberies'. These respondents were then reclassified, and the survey data reanalysed to enable a comparison of the robbed with the non-robbed.

With the new analysis the number of 'robbed' was reduced, and the groups were an almost equal proportion of all pharmacies and robbed pharmacies, as illustrated in Table 2 below.

Table 2. Respondents to the online survey

Comparison	NSW estimate	Survey sample	Survey sample as a proportion of NSW estimate
Total pharmacies in NSW	1,767	266	15%
Robbed pharmacies	71	10	14.1%

The profiles of the respondents were:

- 62% were located in a major city
- 38% were in a rural area

The respondents appear to be a representative sample of both urban and rural areas, however concordance data is limited for converting the postcodes gathered in this survey to 'urban' or 'rural', with some 'urban' definitions including inner regional areas. For example the Department of Health & Ageing Annual Report 2005-2006 showed that 84.3% of pharmacies were in urban areas. Depending on the definitions used for classification, the survey sample may be under-representative of urban pharmacies.

4.2 Summary of key findings from survey & interviews

The responses provided by the robbed pharmacies were compared with the not-robbed. Factors that demonstrated statistically significant differences were that robbed pharmacies were more likely to:

- be located in a socially advantaged area
- be within a medical centre
- use a CCTV camera and have security mirrors within the premises
- have additional measures if open after hours

Robbed pharmacies were also less likely to have cash control procedures in place.

A factor that approached significance for the robbed pharmacies was:

- having only one staff member on duty

These factors and other comparisons are outlined below.

4.2.1 Socioeconomic area and crime rates

The survey sample was compared against the Socio-Economic Indexes for Areas (SEIFA) that ranks Australian regions for advantage/disadvantage, economic resources and education and occupation to show where the affluent live, where disadvantaged live and where highly skilled and educated live.

Ninety percent of robbed pharmacies were in the 2 most advantaged quartiles as compared with 38% in the non-robbed, and this was statistically significant ($p=0.001$). The follow up interviews with the robbed revealed that an 'advantaged' area, as represented by being in the 1st quartile on the SEIFA data, will have pockets within the SEIFA coded area that are relatively affluent as well as pockets of relative poverty. For example the inner city area of Sydney is classified as 'most advantaged', and this includes both expensive apartment blocks as well as areas of Redfern and Waterloo where there are homeless people and community housing providers. However this finding does not explain the locations for all of the robbed pharmacies and requires further investigation.

A quarter of respondents did not know if their area had a 'higher than average' crime rate, but pharmacies in disadvantaged socio-economic areas were twice as likely to perceive their location as having a high crime rate (18% to 9%). Only 10.5% of respondents indicated they had a higher than average crime rate in their suburb for hold-ups, bag snatches, assault etc, and robbed pharmacies were more likely to say they were in an area with a higher than average crime rate. This difference between the robbed and not robbed pharmacies' perceptions of their area's crime rates approached statistical significance ($p=0.060$).

Of the 10 robbed pharmacies, 3 reported a higher crime rate and four reported not having a higher crime rate. The Local Government Areas (LGA) for each of the robbed pharmacies were identified and compared to the state ranking of all robberies in all LGAs (143 LGAs in total). None of the robbed pharmacies were ranked within the top 10 LGAs for robbery*, but three were in the top 25 rankings. The other robbed pharmacies were scattered in the rankings, including being ranked at 100 of the 143 LGAs. Of the 3 robbed pharmacies reporting being in a higher than average crime area 2 were ranked in the top 25 LGAs for robbery. Of those not reporting a higher than average rate, one was ranked within the top 15 LGAs for robbery.

The 10 matched 'control' pharmacies that were not robbed were also analysed for robbery ranking. There were 6 not robbed pharmacies located within the top 15 LGAs for robbery, and the pharmacy location of the lowest ranked risk was ranked at 53 of 143. The recorded crime statistics indicate that the LGAs of most risk of robbery* are listed in Table 3 below.

Table 3. BOCSAR NSW Recorded Crime Statistics – Robbery* - Jan 2007 – Dec 2007

Rank	Local Government Area	Offences 2007	in Rate per 100,000 population
1	Auburn	220	331.9
2	Strathfield	97	298.2
3	Burwood	93	296.3
4	Marrickville	220	287.5

Rank	Local Government Area	Offences in 2007	Rate per 100,000 population
5	Parramatta	353	227.6
6	Ashfield	91	226.0
7	Botany Bay	80	213.8
8	Hurstville	161	210.1
9	Canterbury	266	195.6
10	Holroyd	181	192.0

**Robbery indicates all robbery, and includes robberies in: outdoor, public places; retail/wholesale; residential dwellings; licensed premises; carparks etc.*

The 10 robbed pharmacies were ranked in the following positions for robbery:
 13, 20, 23, 26, 31, 33, 66 & 100.

The 10 matched controls were ranked as follows:
 2, 6, 13, 17, 20, 24, 26, 27 & 53.

This data suggests that robbery data is not always helpful as an indicator of robbery risk.

Note. The Sydney LGA is not used in BOCSAR statistics due to the very high changes in the population numbers each day, so pharmacies in this area could not be compared.

4.2.2 Pharmacy location & surroundings

Pharmacy location was coded for remoteness based on the post codes using ABS 2001 concordance data. Robbed pharmacies were more likely to be in major cities compared to non-robbed pharmacies, but the difference was not statistically significant.

Of all respondents, the reported locations of the pharmacies within their towns or regions were as follows:

- located in a strip shopping strip – 147 pharmacies, 55.5% of respondents
- easy access to a getaway car – 83 pharmacies, 30.3%
- inside a shopping plaza or mall – 20 pharmacies, 6.3%
- within a medical centre - 12 pharmacies, 4.6%

When comparing the robbed and not robbed, the differences are demonstrated in Table 4, with the largest percentage shaded.

Table 4. Number and percentage of respondents and their reported location
 (Note: Percentages exceed 100% as multiple responses are possible)

Pharmacy location	Robbed		Not robbed	
	Number	Percentage	Number	Percentage
Street shopping strip	7	70%	154	67.5%
Easy access for a getaway vehicle	5	50%	127	55.7%
Inside a shopping mall / plaza	1	10%	71	31.1%
Isolated from other shops / businesses	2	20%	13	5.7%
Within a medical centre	3	30%	8	3.6%

Location in/next to a medical centre

When comparing the features of the surroundings between robbed and non-robbed, the only factor that was statistically significant was for the pharmacy's location within a medical centre ($p=0.007$). Features of pharmacies in medical centres as compared to those not in medical centres included: significantly more likely to use a courier service for banking cash; and significantly more likely to have after hours procedures. The issue of being associated within a medical centre was further explored in the interviews. Of the 10 cases (robbed), 6 cases were either within or next to medical centres, as compared with only 3 of the 9 controls.

General surroundings

Other differences between pharmacy surroundings identified in the survey were that robbed pharmacies were more likely to:

- be on a shopping strip
- have easy access for getaway vehicles
- be isolated from other shops/businesses

However these differences were not statistically significant.

Some of the robbed pharmacies believed their location had a major influence on being robbed, confirming some of the literature, and adding some other location features for consideration. They believed the following features were of most relevance:

- located with easy access to main road and getaway (5 of the 10 cases)
- located next to businesses that had minimal pedestrian traffic or passing trade such as professional offices for lawyers and accountants, or businesses opened for short periods during the week (3 of the 10 cases)
- located away from the police station (in area of high crime) (2 of the 10 cases)
- area of high unemployment and high drug and alcohol abuse (2 of the 10 cases)
- within an area known for criminals manufacturing 'ice' and "jail graduates" (2 cases)
- located opposite a large empty block of land with easy access through to the next street (1 case)

Other location features identified in the interviews, but not specifically reported by the pharmacists as impacting on their risk were:

- located in close proximity to a bottle shop or public hotel (5 of the 10 cases)
- located near a drug and alcohol centre and a "home for troubled kids" (1 case)

Interestingly a number of controls also reported being close to either a bottle shop or a licensed hotel, so this factor may not be relevant for risk.

Two of the robbed pharmacies were very surprised that they had been targeted. One was situated above a large shopping centre up a flight of stairs and within view of a medical centre reception desk and with security guards patrolling downstairs, and the other was in a small shopping centre in a quiet suburb. The LGA rankings for robbery for these premises were 66 and 20 respectively (with higher rankings having the most robberies). In both cases the pharmacist believed the robberies were unplanned and opportunistic.

The issue of passing pedestrian traffic may be a factor influencing risk as many of the robbed pharmacies were in areas with other businesses that had few customers and/or opened at different hours to the pharmacies. In contrast many of the controls were located near busy premises such as bread shops, newsagents and other premises that had a high passing trade and/or were open for longer hours than the pharmacy. However one pharmacy that had not been

robbed and was located in a busy pedestrian area reported that the jewellery shop next to their pharmacy had been robbed in broad daylight the previous afternoon.

In summary, when the cases were compared with the matched controls the location differences were:

- robbed tended to be in more isolated locations (eg next to premises that were closed or infrequently visited) while controls were in busier locations
- robbed were more often associated with or next door to medical centres

4.2.3 Pharmacy design

Pharmacies claimed to have a number of the recommended design features, as listed in Table 5, below.

Table 5. Design features as reported by pharmacies

Pharmacy design features	Number	Percentage
Good lighting inside	253	95.1%
Windows with a clear view of the street	175	65.8%
Cash register in clear view of street	162	60.9%
Wide counters between staff and customers	133	50.0%
Elevated work area for the dispensary	127	47.7%
Height markers on exit doors	59	22.2%

There were slight differences in the features in the robbed and not robbed, with more of the not robbed reporting: windows with clear view; cash register in clear view; wide counters; and an elevated work dispensary area. However none of these differences were statistically significant.

The interviews with robbed pharmacies helped to explain some of the apparent lack of difference between the two groups. For example a number of the robbed reported having improved the visibility into and within the pharmacy and to the cash register since a robbery, as at the time of the robbery they had coverings over the windows and one pharmacy reported to have been "cluttered" at the time of the robbery.

External lighting at the front and rear of the premises was also reported as a concern by robbed pharmacists. One pharmacist was worried about the lack of lighting in the street outside his premises, and he felt this was beyond his control to remedy. Two robbed pharmacies upgraded the lighting at their rear exits to improve their vision and to reduce the risk of staff being ambushed by an offender when they left work.

The issue of counter design was discussed with some robbed pharmacists. While they agreed that the sort of measures used by banks may make them safer in the case of a robbery, they also strongly believed that such measures would have a negative effect on their work and in their communications with customers, and this would reduce their ability to provide a personal and professional service.

When comparing the robbed with their matched controls, the issue of vision into the premises and of the street was a consistent factor, with those robbed in many cases (5 of the 10 robbed) having less visibility at the time of their robbery than their matched controls (1 of the 10 not robbed).

4.2.4 Risk mitigation strategies

Respondents indicated a range of risk mitigation strategies as listed in Table 6.

Table 6. Reported risk mitigation strategies

Strategies	Number	Percentage
Opening and closing procedures	248	93.2%
Emergency numbers programmed or on the phone	228	85.7%
Lock the rear and other doors at all times	211	79.3%
Surveillance/security mirrors within the store	162	60.9%
CCTV camera	144	54.1%
Silent alarm at main cash site linked to a security company	137	51.5%
Panic / duress alarm at each register	120	45.1%
Signs reporting there is a CCTV camera	120	45.1%
Locked storage and staff rooms at all times	94	35.3%
Signage indicating limited cash storage	70	26.3%
Store entry warning buzzer	65	24.4%
Additional security measures for after hours opening	56	21.1%
Personal alarms for staff	25	9.4%

Of those with CCTVs, the CCTVs were in nearly all cases positioned to cover exits and other critical areas, and most respondents believed the images were suitable for positively identifying images.

Comparing the robbed and not robbed pharmacies, the robbed pharmacies were more likely to have most of the strategies in place, and the statistically significant differences were that robbed were more likely to have:

- additional security measures if open after hours (70% robbed vs 18.4% not robbed, $p=0.001$)
- a CCTV (90% robbed vs 53.5% not robbed, $p=0.021$)
- surveillance/security mirrors within the store (90% vs 59.6%, $p=0.049$)

Interviews with the robbed pharmacies revealed that the CCTVs were in most cases implemented after having a robbery, rather than being a factor contributing to robbery risk. Installing a CCTV system was the most commonly reported response to a robbery, with 8 of the 10 cases describing either installing a system or upgrading the existing system. Pharmacists that had CCTVs prior to the robberies found that the images their cameras captured were often not good enough to provide police with a suitably detailed picture of the offenders and/or of the offence because of factors such as:

- the camera did not adequately cover the area of the premises where the offender stood
- the angle of the camera provided a bird's eye view and was positioned too high to obtain a front-on image (for example dome cameras not suited to offenders wearing caps etc)

The types of upgrades described were: additional cameras; lowering the cameras to improve vision of the offender to capture faces more than tops of heads (eg replacing dome cameras); colour cameras; digital cameras; cameras at rear exit; and more screens to show offenders that they were being monitored.

The next most commonly adopted strategy following a robbery was to install a 'back-to-base' alarm (4 cases). There were however mixed views on the value of back-to-base alarms, and those who already had them reported the following barriers to their use:

- incidents happened so fast that there was not time to use them;

- staff were too busy responding to the robbery to remember to operate them;
- the offender told them not to touch the system;
- the system was expensive to monitor; and/or
- the police were stationed too far away for the system to be very helpful.

Another strategy adopted after robberies was to have a system of locking the front door (4 cases), and unlike the use of CCTVs, this was generally a new design initiative in premises that had been robbed. This door locking was undertaken in the evenings or when only one person was on duty (eg just the pharmacist on a Saturday afternoon) and worked by having a buzzer and/or an intercom system allowing the pharmacists to assess the person prior to letting them into their premises. One pharmacist explained how the current fashion for wearing caps and hooded tops and scarves can make it hard to determine who to let in after hours.

Pharmacists who used this locked door strategy tended to be either open in the evenings, locking the door at 7pm or 7.30pm, or open with just the pharmacist on selected afternoons. While this system is not failsafe, pharmacists believe this would be a major deterrent to offenders, and the pharmacists using this system did not report a reduction in customers or other negative effects.

Other risk mitigation strategies adopted following a robbery included:

- rear door locked more often
- additional signs regarding having a CCTV
- getting organised before opening the pharmacy (ie not letting in customers until their bags are away and the pharmacy is in order)

One robbed pharmacy reported having only recently moved into the premises and not having completed the installation of their security systems and they wondered if the offender suspected or knew that they were not yet fully operational.

While the cost of security improvements was not requested in the interviews, 2 pharmacists reported their spending after the robbery as between \$4500 and \$7000.

4.2.5 Cash control procedures and banking procedures

Cash control procedures were reported by almost all of the respondents, with the most common of these measures being float limits.

Table 7. Reported cash control procedures

Cash control procedures	Number	Percentage
Have any cash control procedures	248	93.2%
Have a float limit	246	92.5%
Have a time lock and / or drop safe	140	52.6%
Have additional late night / late afternoon cash procedures	105	39.5%

There were differences between the robbed and not robbed pharmacies, with the robbed less likely to report having cash control procedures (statistically significant difference) and a float limit, but more likely to have a time lock/drop safe.

The robbed pharmacists had very different views of the benefit, if any, of time delay safes. While most believed this would be a good deterrent and would make the offender flee empty-handed, others feared that this strategy would serve to agitate the possibly already agitated offender and could increase their use of violence towards staff. One suggestion was for a "nationwide

initiative" to advertise that all pharmacies will have safes that take 1hr - 90 minutes to open, as one way to deter potential offenders from pharmacies.

Over 75% of respondents claimed to have some form of security procedures for their banking, with the most common procedure being secure cash counting (86.5%) and the least common being the use of a courier service (less than 5%), as illustrated in Table 8.

Table 8. Reported cash handling and banking procedures

Cash handling and banking	Number	Percentage
Count cash in a secure area	230	86.5%
Take cash to the bank at random times of the day	221	83.1%
Have security procedures for taking the cash to the bank	205	77.1%
Alternate routes when taking cash to the bank	112	42.1%
Have secure courier to deposit cash at the bank	13	4.9%

Pharmacists listed some additional cash control methods in the online survey, and these included:

- reducing cash in the till after 7pm or in the evenings
- checking outside the premises for suspicious people or vehicles prior to opening the safe
- skimming \$50 & \$100 notes from the till
- only taking money from the till when no customers are present (where possible)
- taking money out of till each 1 – 2 hours throughout the day, with a signed roster sheet to ensure this happens
- use of a cash courier company to clear the safe weekly (daily takings deposited into the safe)
- pay staff via direct deposit rather than in cash
- encourage use of EFTPOS and 'cash-out'

Additional banking procedures reported by pharmacists in the online survey were:

- using different bank branches and on random days
- using different bags for the cash
- placing cash bag into handbag or clothing
- use quick drop safe for faster and safer banking
- use different staff to take the cash to the bank
- person taking the cash does not wear a uniform (eg identifying the pharmacy)

In comparing robbed and not robbed pharmacies, those that had been robbed were more likely to:

- take cash at random times (approached statistical significance, $p=0.075$)
- count cash in a secure area
- alternate their route when taking money to the bank

Those not robbed were more likely to:

- have a secure courier

Interviews with the robbed pharmacies revealed that as with other strategies, their cash handling and banking procedures tended to be upgraded following a robbery. The most common strategies reported by robbed pharmacists were:

- drop safe/time delay safe – 3 cases
- implementing a float limit – 1 case
- moving cash counting further away from customers – 1 case

- bank daily rather than weekly – 1 case
- signage re cash limit – 1 case

In addition, many pharmacists described how they carry a lot less cash now as compared with 10-20 years ago as cheques and EFTPOS are common.

In comparing the cash control strategies used by the robbed cases and their matched controls, only one of the sample of 10 robbed lacked some of the more basic initiatives such as:

- cash counting undertaken away from the main counter
- having a float limit
- regular banking (ie daily rather than weekly)

4.2.6 Opening hours & procedures

Typical hours of operation for the pharmacies responding to the survey were:

- weekday hours (Monday-Friday) – open between 8.30 – 9am close between 5.30 – 7pm
- some with late closing on Thursdays – between 7-9pm
- Saturday – open between 8.30 – 9am, close between 12 – 1pm
- Sunday – approximately 50% closed, remaining mostly open sometime between 9-10am, and closing between 12-3pm
- approximately 10% open each day for long periods, such as from between 7-9am to close between 8-10pm

Table 9 lists the timing of robberies as reported by the responding robbed pharmacies.

Table 9. Reported robberies by time and day

Day of week of robberies	Time of robberies	Opening hours on the day of the robbery/ies
Saturday	7.30pm	9am – 9pm
Monday	Night	9am – 9pm
Saturday	7.30pm	9am – 9pm
?	7.30pm	9am – 9pm
Monday	10am	9am – 6pm
Saturday	2.20pm	9am – 3pm
Saturday	8.30pm	8am – 9.30pm
?	10.30am	?
Monday	6.30pm	9am – 6pm
Sunday	12.45pm	9am – 1pm
Sunday	9.50pm	9am – 10pm
weekday	4pm	8.45 – 5.30
Sunday	6pm	8am – 8pm
Thursday	2.30pm	7am – 11pm

These results show that most of these robberies occur near the end of the shift, with 11 of the 13 known robberies occurring within 1.5 hours before or after close. There are also 2 early morning robberies, and one mid afternoon. The opening hours of the robbed cases and not robbed controls were reviewed, and these are summarised in Table 10.

Table 10. Hours of opening – robbed compared with matched 'not robbed'

Total hours open per week		
	Cases (at time of robbery)	Matched controls
Case 1	87	82
Case 2	52	56
Case 3	56	77
Case 4	94.5	94.5
Case 5	48.5	50
Case 6	64	52
Case 7	91	57
Case 8	47	52
Case 9	89	94.5
Case 10	109	62

	Cases (at time of robbery)	Matched controls
Average hours	73.8	67.7
Range of hours	47 - 109	50 – 94.5
Median hours	75.5	59.5

The robbed pharmacies were open an average of almost 74 hours per week, as compared to non-robbed that were open an average of just under 68 hours per week. The difference between the median total hours was more marked, with 75.5 hours for the robbed as compared to 59.5 hours for the not robbed.

Being open for a long time is believed to increase the risk by not only the exposure time, but hours extending into quiet and/or night-time periods are likely to increase the risk (as is seen in service station robberies for those opening long hours). Offenders were considered to use the external darkness to assist with their escape and also as there were generally less pedestrians at these times.

Of the robbed pharmacies, 5 believed their relatively 'long' opening hours (as compared with surrounding premises) was a major factor in being targeted. Two of these pharmacies now close earlier to be more consistent with the opening hours of surrounding businesses to reduce this risk (eg closing at 6pm rather than 7pm). However one pharmacy open for long hours compared with nearby pharmacies that closed at 5.30pm stated that the early closing pharmacies seemed to be robbed as often as he was, so he failed to see an advantage of closing earlier.

The 'after hours' procedures implemented by the pharmacies responding to the online survey included:

- use of security guards;
- notifying the security company of the time they expected to be on site (when open later than usual); and
- use of door locking for evening hours

Other general measures such as the installation of back-to-base alarms were also reported.

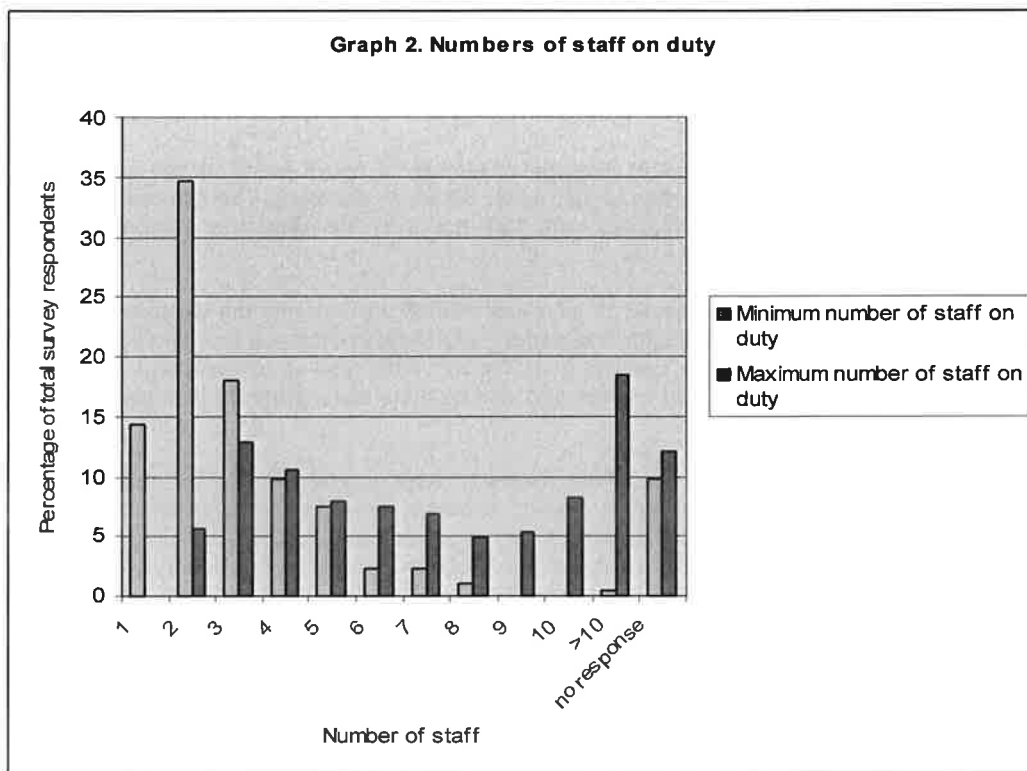
Security guards were used in various ways. In some cases the guard was employed to patrol the shopping centre in which the pharmacy was located (8 of the 14 pharmacies who reported having security guards used them in this way), but in other cases the security guard was engaged specifically for the pharmacy for the evening hours (eg from 6pm) and stood near the entrance of

the premises, and at some premises guards were responsible for walking staff to their cars after closing.

4.2.7 Staffing

The total number of staff employed at pharmacies ranged from 2 to 45, with an average of approximately 12 staff. These figures are approximate as some respondents reported actual numbers of staff (mixture of fulltime, part-time and casual members) while others listed 'fulltime equivalent' positions.

The reported number of staff on duty in the pharmacies at one time ranged from one to more than 10, with the median minimum number of 2 (35% of respondents). 14.3% of respondents reported having only one staff member on duty, so being alone in the pharmacy. The median maximum number of staff was more than 10 (18%).



Staff numbers were recoded into approximately equal-sized groups to compare any differences between the robbed and not robbed based on staff numbers. Robbed pharmacies had less staff in the pharmacy at both their minimum and maximum staff times, but there was not a statistically significant difference.

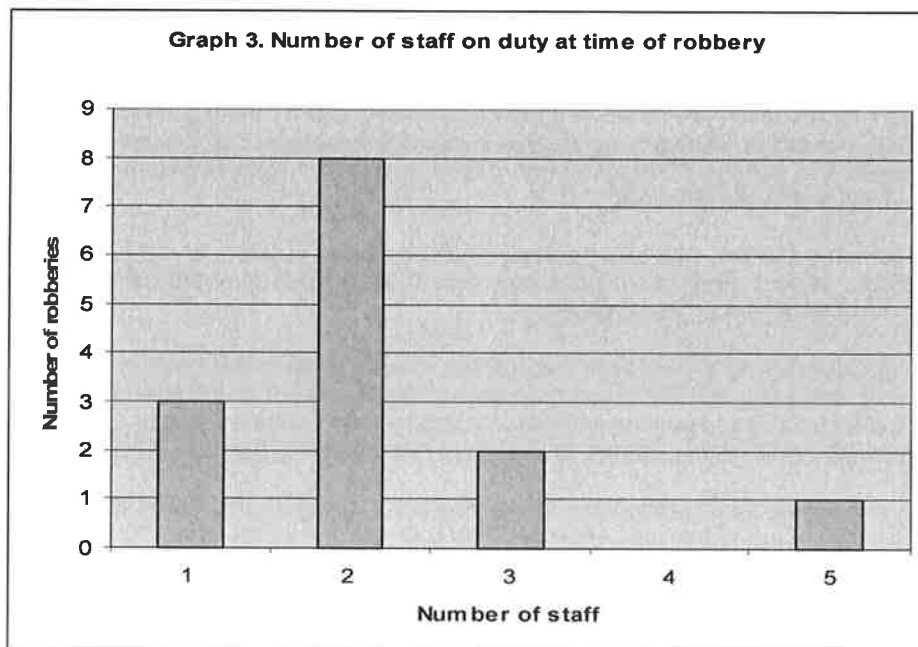
Table 11. Reported staffing levels

Minimum staff level	Robbed pharmacy	Not robbed	Total No.	Total %
1-2 staff	80%	52.5%	124	53.7%
3+ staff	20%	47.5%	107	46.3%

Maximum staff level	Robbed pharmacy	Not robbed	Total No.	Total %
1-6 staff	100%	47.2%	111	49.3%
7+ staff	0%	52.8%	114	50.7%

Of the 10 robbed pharmacies, there were 14 robberies as some sites had multiple robberies. The number of staff on duty at the time of the robbery was as follows (as illustrated in Graph 3):

- 1 staff member – in 3 cases
- 2 staff – in 8 cases
- 3 staff – in 2 cases (in one of these robberies the offender thought there was only one staff member)
- 5 staff – in 1 case



Staff gender was not requested in the survey, however in the interviews with the 10 robbed pharmacies, 3 pharmacists suggested that having only women serving in the pharmacy may increase the pharmacy's risk of being robbed as women may be considered to be an easier target and use less or no resistance. These 3 pharmacists believed that seeing a man or men working behind the counter may act as a deterrent to some offenders, and this factor has also been suggested in an Australian study (Nugent et al 1989).

4.2.8 Working alone policy

65% of all pharmacies reported having a policy of 'No working alone', and this was consistent with the reported staffing numbers previously described, as only 35% had a minimum of one staff member in the premises. Robbed pharmacies were less likely to have this policy, and this difference approached significance (60% of the robbed had no working alone policy compared with 65% of not robbed, $p < 0.10$).

In the interviews the robbed pharmacies described when and why they had had only one staff member on duty. This was generally: at very quiet periods such as Saturday afternoon or Sunday morning; just prior to opening or closing the business; or when another staff member was undertaking deliveries. While some of the robbed pharmacies have since changed this practice, others continue to have people working alone, with some having implemented the locked door strategy to reduce their risk. Three of the pharmacists who were working alone at the time of their robbery did not believe that this was a factor increasing their risk.

4.2.9 Training in armed hold-ups or related

Pharmacies reported the following training was provided to staff.

Staff training	Number	Percentage
What to do if held up	222	83.5%
Dealing with aggressive customers	209	78.6%

There was no significant difference between robbed and non-robbed for training on what to do if held up, however training in managing aggressive customers approached significance (70% of robbed pharmacies had training vs 79.4% of not robbed, $p < 0.10$). Robbed pharmacies were less likely to provide both types of training.

Training was generally current, with just over half having occurred in 2007, and a further 20% occurring in 2006. While robbed pharmacies were less likely to have provided training in the previous year, the difference was not significant.

The robbed pharmacies generally believed that training in what to do in the event of an armed robbery was very important, and the perceived value of this appeared to increase following a robbery. The training referred to was the material provided by the Pharmacy Guild of Australia as part of staff members' certification under the Quality Care Pharmacy Program (QCPP 2008).

In most cases people described responding to the offender's demands and acting quickly and following instructions. One pharmacist explained how just thinking of the steps to take in an armed robbery and how to behave can assist a person to react appropriately.

However one pharmacist described how he tried to "make it harder" for offenders and how he would "play tricks on them". He outlined how he had fought offenders, including using an object near his counter to strike one, as well as giving an offender a pretend or decoy bag of money. The pharmacist believed that if he gave offenders what they wanted they would come back repeatedly, but if he resisted the offenders they would go elsewhere.

Another pharmacist described feeling powerless and wondering if a better approach to reducing pharmacy robberies was to "look at the bigger picture" regarding access to drugs and "move away from a prohibition model towards the Swiss model" of providing drug users easier access.

4.2.10 Offenders, weapons and behaviour

The number of offenders per robbery was also reviewed, with a single offender being the most common scenario. The 10 robbed pharmacies reported that in their 14 robberies (as some had multiples) there was:

- 1 offender – in 11 robberies
- 2 offenders - in 2 robberies
- 3 offenders - in 1 robbery

There was no apparent pattern to the offender number and staff number, with:

- 1 offender robbing pharmacies that had between 1 to 5 staff on duty
- 2 offenders robbing pharmacies with 2 staff on duty
- 3 offenders robbing a pharmacy with 1 staff on duty

Offenders generally wore clothing to disguise their appearance, including balaclavas, hooded tops and caps. The descriptions of the offenders provided by pharmacists and from reports of other robberies suggest that the offenders are in many cases affected by drugs, and these drugs can make the offenders aggressive and agitated. From pharmacists' descriptions of offenders, included one was "deranged" and another who was "high as a kite" and "jumping up and down".

As well as their threatening and unusual behaviours, in most cases the offender/s carried weapons and these included:

- claims of having a gun although these were under their clothing or otherwise obscured from view (3 robberies)
- machetes (2 robberies)
- knife (2 robberies)
- tomahawk and knife (1 robbery)
- handgun and hammer (1 robbery)
- chisel (1 robbery)
- syringe (1 robbery)
- weapon was not known or not used (3 robberies)

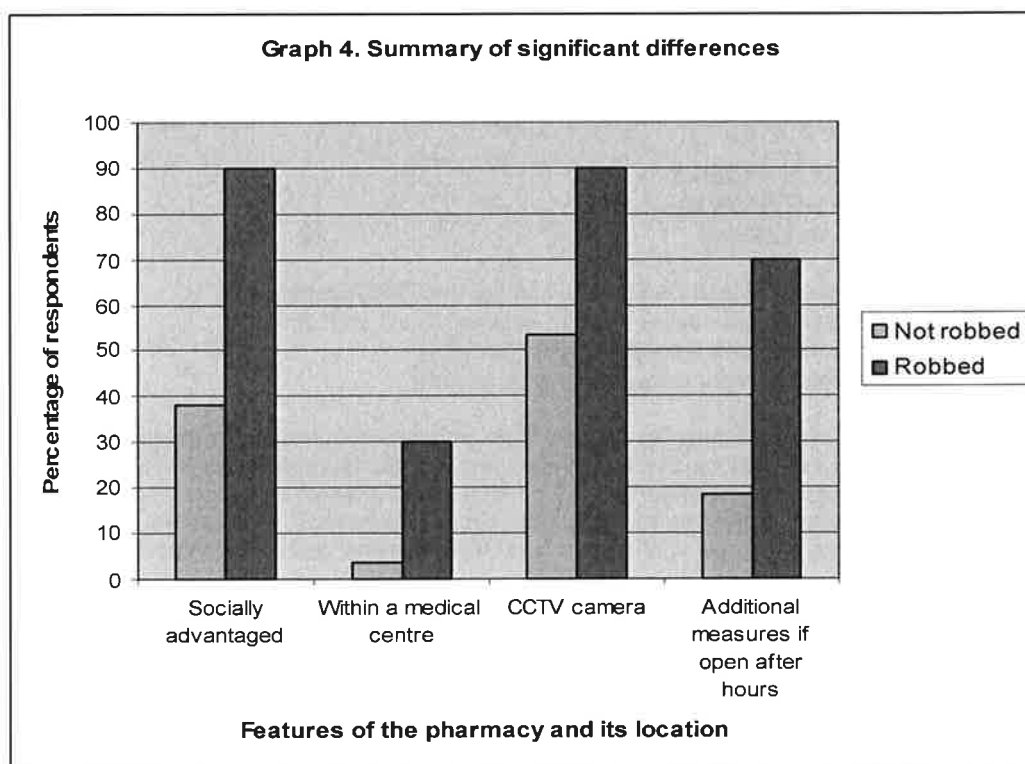
During the robbery about one third of the offenders assaulted a pharmacy staff member, including pushing them, throwing them to the floor, and hitting them with a chisel.

Of the robbed pharmacies, the pharmacists reported the offender leaving when:

- they had what they wanted (eg cash and/or drugs)
- they saw someone outside the pharmacy
- they were confronted by the pharmacist (in cases where the offender did not have the gun or a weapon that he claimed to have under his clothing)

4.2.11 Summary of significant differences

The following graph provides a summary of the statistically significant differences identified between the robbed and not robbed pharmacies. Robbed are represented by the darker boxes.



4.3 Cost benefit analysis results

Of the pharmacies in NSW insured by the main pharmacy insurer (Guild Insurance) there were 100 crimes reported, representing approximately 8% of these pharmacies. There was a wide variation in the losses incurred with the crimes with an average loss of \$1,000, and with most pharmacies resuming trading on the same day. This represents an industry wide cost of \$100,000 or an average of about \$77 per pharmacy per year.

There were 15 workers compensation claims for 2006/07 (7% of all crimes) and it is assumed that all these were violent events. The average cost per violence-related crime claim for the retail industry is approximately \$25,000. Under the pharmacy industry's workers' compensation scheme there is no claims experience component to the premium and these costs are not considered significant to the industry. Put another way, the claims costs for an individual worker's compensation claim are absorbed across the industry.

The industry experiences a high percentage of returning workers ceasing work during a shift although the effect of experiencing a hold-up cannot be predicted for a single employee. The range of responses for employees experiencing a violent event is from no 'loss of time' to the worker never resuming work within the industry. The Pharmacy Guild also advises that it is common industry practice that while an employee is on a return-to-work program following a violent event, for the individual pharmacy to pay an additional worker to work alongside that person.

The figure of \$25,000 for a violent crime claim reportedly represents only replacement of wages, so it is assumed that each pharmacy expends a matching amount employing a pharmacist or

pharmacy assistant to cover the return-to-work process. This would represent an industry cost of \$375,000 or an average of \$288 per pharmacy each year.

Thus, in any one year an average pharmacy in NSW risks losing less than \$400 (\$77 + \$288) due to crimes and/or violent events. Data was not available to enable quantification of other costs associated with violent events but, even assuming these 'hidden costs' equalled the direct costs, an average pharmacy risks losing less than \$1,000 per year due to crimes and/or violent events. However the aggregate annual cost for the industry is more substantial, at a figure of at least \$475,000.

The risk of an individual pharmacy experiencing a crime was calculated at 8% in any one year. The risk of experiencing a workers compensation claim arising from a violent event is 1% in any one year. However, the cost to those individual pharmacies that do experience a workers compensation claim following a violent event is significant. The average cost to pharmacies of violent events may be considerably higher than the \$25,000 when taking into account the 'hidden costs'. Another factor is that pharmacists at higher risk are likely to experience repeat victimisation and thus higher costs.

The most significant costs to the pharmacy industry arising from violent events relate to workers who experience severe post-traumatic reactions; \$375,000 in workers compensation in NSW annually.

In summary:

- The risk of a violent event is low for the average pharmacy in NSW and it is only cost effective to implement low cost and no cost risk reduction strategies.
- Where it is possible to identify pharmacies at particularly high risk of experiencing a violent event it would be cost effective for these pharmacies to implement risk control measures at costs of at least \$26,000 and considerably more if 'hidden costs' are taken into account.

5. DISCUSSION & CONCLUSION

Pharmacies in NSW currently use a variety of risk mitigation strategies to reduce their chance of being a victim of an armed robbery, with the most common being: having good lighting (95.1%), cash control procedures (93.2%), float limits (92.5%), use of opening and closing procedures (93.2%), and cash counting in a secure area (86.5%). Strategies that are least frequently used are to have secure couriers to deposit cash (4.9%) and to have personal alarms for staff (9.4%).

This study identified a number of differences between the characteristics of pharmacies that were robbed and those not robbed.

A key factor that appears to pose an increased threat to pharmacies is if they are located within a medical centre, as there was a highly statistically significant difference in robberies for these pharmacies ($p=0.007$). The reason for this apparent increase in risk is not known, and this factor was not noted in the literature or other crime data. The interviews with the robbed pharmacies identified that if robbed pharmacies were not 'within' a medical centre as the online survey asked, they were often next to a medical centre. The possible impact of being in or next to a medical centre requires further investigation.

Having only one staff member on duty also appears to increase robbery risk, and the difference between robbed and not robbed approached significance for this factor. Given offenders comments about preferring fewer staff (Nugent et al 1989) this should be a warning to the 35% of pharmacies that do not currently have a 'no working alone' policy.

Other risk factors that were suggested in the online surveys (though not statistically significant differences) were being located on a shopping strip, having easy access to get away vehicles, and being isolated. The interviews with the robbed and with the matched controls helped to clarify the issues, suggesting it is not the shopping strip but rather the nature of the surrounding businesses and their hours of business that appear to impact on risk. Premises that were either isolated or were located near specialist businesses that had minimal pedestrian traffic and/or were open for shorter or different times to the pharmacy were more likely to have been robbed than those in busier areas.

Visibility into the store was noted as a difference between robbed and not robbed, but this was not statistically significant. However interviews with the robbed pharmacies revealed that at the time of the robbery many had poor visibility into their pharmacy, and that since the robbery this was upgraded.

Pharmacies that have been robbed are significantly more likely to have CCTV systems installed ($p=0.021$), and in each case these were either installed or upgraded following a robbery. CCTVs are used in just over half of all pharmacies. The robbed pharmacies were also more likely to use surveillance mirrors.

The use of additional security measures after hours was also found to be a statistically significant difference between the robbed and not robbed ($p=0.001$) with the robbed implementing additional measures as a direct result of having been robbed.

The issue of longer opening hours also appears to impact on risk with robbed pharmacies open an average of 73.8 hours and with a median of 75.5 hours, as compared with the matched not robbed pharmacies being open for an average of 67.7 hours and a median of 59.5 hours. Two robbed pharmacies reduced their hours immediately after their robberies, convinced that their late hours and beyond those of neighbouring businesses placed them at increased robbery risk.

The influence of socioeconomic situation on risk is unclear, as although this survey found a highly statistically significant difference in robbed pharmacies being located in relatively 'advantaged' areas ($p=0.001$), further investigation identified that some of these areas have pockets of both high and low advantage.

Unfortunately the evidence for factors that are associated with robbed or not robbed pharmacies is not always consistent, as despite some trends as identified in this study and in past research, there are also premises that are robbed that are located in seemingly low risk sites and in premises that are already employing a wide range of risk mitigation strategies. Research into armed robbery in Australia helps to explain this apparent inconsistency, and Borzycki (2008) describes two distinct categories of robberies:

- opportunistic, unplanned and often low yield
- planned, use of harder to obtain weapons (eg firearms) and higher yield

Borzycki believes that pharmacy robberies are often opportunistic.

The impact of security measures on different offenders also varies, as studies have highlighted how when a person is desperate for drugs or for cash to obtain drugs they will be less deterred by security measures, more brazen in their actions, and more likely to offend.

Given there is only an 8% chance an individual pharmacy experiencing a crime in any one year (approximately one chance in 15 years of business) and considerably less for a violent event (one chance in 100 years of business) it is expected individual pharmacies would be reluctant to implement expensive preventive risk control measures.

As the aggregate annual cost for the industry is substantial, and at least \$475,000, it would be more cost effective to implement larger scale solutions at an industry level. For example, some of the strategies that have been identified through this study as being successful in reducing the risk of violent events within pharmacies involve the location, design and layout of pharmacy premises.

6. RECOMMENDATIONS

Despite the gradual reduction in pharmacy robberies over the past 10-15 years, the past 2 years has seen a plateau of these robberies. This finding suggests that pharmacists should not be complacent, particularly due to the sometimes random nature of armed robberies.

There are three distinct areas where pharmacists and other retailers can make a difference in their businesses to reduce the cost and the impact of armed robbery:

1. Reduce offenders from targeting/entering the business
2. Reduce the harm towards staff and customers should an offender enter the business
3. Reduce any ongoing harm/illness to people following an armed robbery event

Each of these areas is outlined below.

The findings from this project suggest that to reduce offenders targeting and entering the pharmacy, pharmacists should consider:

- avoiding being located within a medical centre (although the reasons behind this difference are not known and require further investigation)
- avoiding being located in an isolated area, where there is limited pedestrian traffic or businesses open at different times or for shorter periods
- being aware of having easy access for quick getaways
- improving visibility into the premises
- reviewing opening hours, and avoiding long hours unless other measures are in place (eg locked doors with buzzers/intercoms)
- having a 'no working alone' policy

Other measures such as time delay safes also appear to assist as a deterrent.

Should an offender enter the pharmacy, the aim must be harm minimisation. The pharmacist and their staff need to reduce their risk of being assaulted and follow the guidelines as provided by the police or as developed by the Pharmacy Guild of Australia. As robbery is an infrequent and unpredictable event, currency of training is important to remind all staff of the recommended steps to take in the event of a robbery.

Although the impacts of post-traumatic stress were not specifically investigated in this project, this condition and other conditions resulting from violence can have major health and disability consequences, as well as being the cause of expensive claims costs as outlined in the cost benefit analysis. Victims of armed robberies require skilled, professional management to assist them to resume their duties and to reduce the financial and other impacts on the pharmacy industry. Where there is evidence that the impact of trauma can be reduced by procedures including induction, ongoing training, "first aid" following a traumatic event and ongoing management, it would be cost effective to develop industry-based training materials covering those factors shown to be effective.

The most cost effective method for implementing solutions within the pharmacy industry would be for industry-wide information to be developed and distributed to individual pharmacies. This would include help with choosing a location for a pharmacy and advice on the design of new or refurbished pharmacies along with any additional training material for employees, including guidance on managing individual reactions to armed robbery events.

This guidance material could assist pharmacists to assess their exposure to armed robbery risk and identify their current risk level, and could guide them to take the appropriate preventative measures, particularly where they are thought to be cost effective. As the results of this project show, there are also risk mitigation initiatives that require little or no additional cost to the individual pharmacy (for example improving visibility to the street).

The findings from this report together with following checklist are recommended to assist pharmacists to better identify and assess their own risk levels:

- AIC Robbery and Armed Hold-Ups Self-Assessment Sheet (AIC 2007), also available for download at: http://www.aic.gov.au/topics/business/aic_robbery.pdf

In addition to the above checklist, Dr Claire Mayhew, a former employee of the AIC, developed a checklist and guidance that she has tailored to the pharmacy industry in Australia, but this has not yet been published or distributed. This 2 page A4 sized guide entitled "Tips for reducing the likelihood of armed hold-ups in pharmacies" provides advice under the following headings:

- What are the risk factors?
- Impact of violence
- Prevention strategies
- Make it easy to see and identify criminals
- Cash control and staff guidelines

This material has reportedly already been field-tested and approved. The advice in the above guidance material is consistent with the findings from this project, and the material appears to appropriately target the key issues. It is therefore recommended that this material developed by Dr Mayhew be published and adopted by the pharmacy industry to further assist the industry to reduce their risk of armed robberies.

The characteristics of the pharmacies appear to have many similarities with other 'soft' targets, such as small retail businesses that are also often open for relatively long hours. The AIC guide for robbery and armed hold-up self assessment (AIC 2007) could equally be promoted to these retailers. However tailored material is generally preferable and more effective for different industry groups. Dr Mayhew has also prepared tailored guidance for fifteen different sectors of the retail industry, and again these have each been field tested and approved by the various industry associations but have yet to be published. To assist other industry sectors faced with similar risks to the pharmacy industry these guides should also be published and distributed.

7. REFERENCES

ABC Television, 2004, Four Corners, 'In the Firing Line'

ABC Television, 2006, Four Corners, 'The Ice Age' & 'Chronology: The emergence of Methamphetamine in Australia'

Australian Institute of Criminology, Armed Robbery in Australia: 2003 National Armed Robbery monitoring program Annual Report

Australian Institute of Criminology, 1995, The Promise of Crime Prevention – Leading Crime Prevention Programs

Australian Institute of Criminology, 2001, Research and Public Policy Series No 38 – Weapon Involvement in Armed Robbery

Australian Institute of Criminology, 2003b, Crime Reduction Matters No 12. – Preventing Repeat Victimisation

Australian Institute of Criminology, 2004, Crime Reduction Matters No 22 – Does drug use cause crime? Understanding the drugs crime link

Australian Institute of Criminology, 2004a, Crime Reduction Matters No 28. – Preventing retail theft.

Australian Institute of Criminology, 2004b, Crime Reduction Matters No 18. - CCTV as a crime prevention measure

Australian Institute of Criminology, 2005, Crime Reduction Matters No 30. – Is crime predictable

Australian Institute of Criminology, 2006, Australian Crime Facts and Figures 2005

Australian Institute of Criminology, 2006a, Crime Facts Info – Armed robbery in Australia: weapon use by location

Australian Institute of Criminology, 2006b, Crime Reduction Matters No 42. - CCTV: recent findings

Australian Institute of Criminology, 2007, Robbery and Armed Hold Ups Self Assessment Sheet

Bell W, 1991, Urban Design, presented at the conference: National Overview of Crime Prevention, Australian Institute of Criminology

Borzycki M, 2003, No. 253: Bank robbery in Australia, Trends & Issues in Crime and Criminal Justice, Australian Institute of Criminology

Borzycki M, 2008, Armed robbery in Australia: 2005 National Armed Robbery Monitoring Program Annual Report, Research and Public Policy Series No.84, Australian Institute of Criminology

Borzycki M, Sakurai Y & Mouzos J, 2004, Research & Public Policy Series No 62, Armed Robbery in Australia: 2003 National Armed Robbery Monitoring Program Annual Report, Australian Institute of Criminology

Bureau of Crime Statistics and Research 2008a, Number of robbery incidents recorded by NSW Police Force as occurring in chemists and selected other premises, unpublished report, reference fc08-6429, as requested by Fiona Weigall

Bureau of Crime Statistics and Research 2008b, Number of incidents and trends for armed robbery recorded by NSW Police Force for selected premises type, unpublished report, reference cb08-6526, as requested by Fiona Weigall

Canadian Centre for Occupational Health, 2001, <http://www.ccohs.ca/ccohs/contacting.html>

Clarke RV & McGrath G, 1990, Cash reduction and robbery prevention in Australian betting shops, *Security Journal*

Dolahenty A, 1999, PharmacyWatch curbs crime, *Security Australia*, June 1999

Eklom P 1988, Preventing post office robberies in London; Effects and side effects, *Journal of Security Administration*, Vol 11

Gibson J, 2006, Armed pub raid turns bloody, *Sydney Morning Herald*, 8 November 2006

Grandjean C, 1990, Bank robberies and physical security in Switzerland: A case study of the escalation and displacement phenomena, *Security Journal*, vol 1

Guild Insurance, 2006, personal communications and data summaries regarding armed robberies to policy holders in Australia

Hannan T, 1982, Bank robberies and bank security precautions, *Journal of Legal Studies*, Vol 11

Knight Frank Research, 2008, <http://www.knightfrank.com/ResearchReportDirPhase2/11223.pdf>

Lins S & Erikson RJ, 1998, Stores learn to inconvenience robbers: 7 – Eleven shares many of its robbery deterrence strategies, *Security Management*, Vol 42:11

Mayhew C & Chappell D, 2001, Prevention of Occupational Violence in the Health Workplace, Discussion paper 2, Taskforce on the prevention and management of violence in the health workplace, School of Industrial Relations and Organisational Behaviour, UNSW.